

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) P24078FG/TPG

Box No. I TITLE OF INVENTION

Nucleic Acid Molecules Specific for Bacterial Antigens and Uses Thereof

Box No. II APPLICANT

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

THE UNIVERSITY OF SYDNEY
Parramatta Road
Sydney, New South Wales 2006
Australia

This person is also inventor.

Telephone No.

Facsimile No.

Teleprinter No.

State (i.e. country) of nationality:

AUSTRALIA

State (i.e. country) of residence:

AUSTRALIA

This person is applicant
for the purposes of:

all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

REEVES, Peter Richard
20 Mansfield Street
GLEBE, NEW SOUTH WALES
AUSTRALIA 2037

This person is:

applicant only
 applicant and inventor
 inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

GREAT BRITAIN

State (i.e. country) of residence:

AUSTRALIA

This person is applicant
for the purposes of:

all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:

agent common representative

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)

GRIFFITH HACK
GPO Box 4164
SYDNEY NSW 2001
AUSTRALIA

Telephone No.

61-02-9957-5944

Facsimile No.

61-02-9957-6288

Teleprinter No.

Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS

If none of the following sub-boxes is used, this sheet is not to be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

WANG, Lei
8A Holt Street
NORTH RYDE, NEW SOUTH WALES
AUSTRALIA 2113

This person is:

 applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

AUSTRALIA

State (i.e. country) of residence:

AUSTRALIA

This person is applicant for the purposes of: all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

This person is:

 applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of: all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

This person is:

 applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of: all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (i.e. country) of residence if no State of residence is indicated below.)

This person is:

 applicant only applicant and inventor inventor only (If this check-box is marked, do not fill in below.)

State (i.e. country) of nationality:

State (i.e. country) of residence:

This person is applicant for the purposes of: all designated States all designated States except the United States of America the United States of America only the States indicated in the Supplemental Box

 Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No.V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) (mark the applicable check-boxes; at least one must be marked):

Regional Patent

AP ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, SD Sudan, SZ Swaziland, UG Uganda, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT

EA Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT

EP European Patent: AT Austria, BE Belgium, CH and LI Switzerland and Liechtenstein, DE Germany, DK Denmark, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT

OA OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

CY CYPRUS

National Patent (if other kind of protection or treatment desired, specify on dotted line):

<input checked="" type="checkbox"/> AL Albania	<input checked="" type="checkbox"/> LT Lithuania
<input checked="" type="checkbox"/> AM Armenia	<input checked="" type="checkbox"/> LU Luxembourg
<input checked="" type="checkbox"/> AT Austria	<input checked="" type="checkbox"/> LV Latvia
<input checked="" type="checkbox"/> AU Australia	<input checked="" type="checkbox"/> MD Republic of Moldova
<input checked="" type="checkbox"/> AZ Azerbaijan	<input checked="" type="checkbox"/> MG Madagascar
<input checked="" type="checkbox"/> BA Bosnia and Herzegovina	<input checked="" type="checkbox"/> MK The former Yugoslav Republic of Macedonia
<input checked="" type="checkbox"/> BB Barbados	<input checked="" type="checkbox"/> MN Mongolia
<input checked="" type="checkbox"/> BG Bulgaria	<input checked="" type="checkbox"/> MW Malawi
<input checked="" type="checkbox"/> BR Brazil	<input checked="" type="checkbox"/> MX Mexico
<input checked="" type="checkbox"/> BY Belarus	<input checked="" type="checkbox"/> NO Norway
<input checked="" type="checkbox"/> CA Canada	<input checked="" type="checkbox"/> NZ New Zealand
<input checked="" type="checkbox"/> CH and LI Switzerland and Liechtenstein	<input checked="" type="checkbox"/> PL Poland
<input checked="" type="checkbox"/> CN China	<input checked="" type="checkbox"/> PT Portugal
<input checked="" type="checkbox"/> CU Cuba	<input checked="" type="checkbox"/> RO Romania
<input checked="" type="checkbox"/> CZ Czech Republic	<input checked="" type="checkbox"/> RU Russian Federation
<input checked="" type="checkbox"/> DE Germany	<input checked="" type="checkbox"/> SD Sudan
<input checked="" type="checkbox"/> DK Denmark	<input checked="" type="checkbox"/> SE Sweden
<input checked="" type="checkbox"/> EE Estonia	<input checked="" type="checkbox"/> SG Singapore
<input checked="" type="checkbox"/> ES Spain	<input checked="" type="checkbox"/> SI Slovenia
<input checked="" type="checkbox"/> FI Finland	<input checked="" type="checkbox"/> SK Slovakia
<input checked="" type="checkbox"/> GB United Kingdom	<input checked="" type="checkbox"/> SL Sierra Leone
<input checked="" type="checkbox"/> GE Georgia	<input checked="" type="checkbox"/> TJ Tajikistan
<input checked="" type="checkbox"/> GH Ghana	<input checked="" type="checkbox"/> TM Turkmenistan
<input checked="" type="checkbox"/> GM Gambia	<input checked="" type="checkbox"/> TR Turkey
<input checked="" type="checkbox"/> GW Guinea-Bissau	<input checked="" type="checkbox"/> TT Trinidad and Tobago
<input checked="" type="checkbox"/> HU Hungary	<input checked="" type="checkbox"/> UA Ukraine
<input checked="" type="checkbox"/> ID Indonesia	<input checked="" type="checkbox"/> UG Uganda
<input checked="" type="checkbox"/> IL Israel	<input checked="" type="checkbox"/> US United States of America
<input checked="" type="checkbox"/> IS Iceland	<input checked="" type="checkbox"/> UZ Uzbekistan
<input checked="" type="checkbox"/> JP Japan	<input checked="" type="checkbox"/> VN Viet Nam
<input checked="" type="checkbox"/> KE Kenya	<input checked="" type="checkbox"/> YU Yugoslavia
<input checked="" type="checkbox"/> KG Kyrgyzstan	<input checked="" type="checkbox"/> ZW Zimbabwe
<input checked="" type="checkbox"/> KP Democratic People's Republic of Korea	
<input checked="" type="checkbox"/> KR Republic of Korea	
<input checked="" type="checkbox"/> KZ Kazakhstan	
<input checked="" type="checkbox"/> LC Saint Lucia	
<input checked="" type="checkbox"/> LK Sri Lanka	
<input checked="" type="checkbox"/> LR Liberia	
<input checked="" type="checkbox"/> LS Lesotho	

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

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In addition to the designations made above, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except the designation(s) of
 The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM

Further priority claims are indicated in the Supplemental Box

The priority of the following earlier application(s) is hereby claimed:

Country (in which, or for which, the application was filed)	Filing Date (day/month/year)	Application No.	Office of filing (only for regional or international application)
item (1) Australia	01-05-97 1 May 1997	PO6545	
item (2) Australia	22-07-97 22 July 1997	PO8162	
item (3)			

Mark the following check-box if the certified copy of the earlier application is to be issued by the Office which for the purposes of the present international application is the receiving Office (a fee may be required):

The receiving Office is hereby requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) identified above as item(s): **(1) and (2)**

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (If two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used): **ISA / AU**

Earlier search Fill in where a search (international, international-type or other) by the International Searching Authority has already been carried out or requested and the Authority is now requested to base the international search, to the extent possible, on the results of that earlier search. Identify such search or request either by reference to the relevant application (or the translation thereof) or by reference to the search request:

Country (or regional Office): Date (day/month/year): Number:

Box No. VIII CHECK LIST

This international application contains the following number of sheets:

1. request	:	4	sheets
2. description	:	93	sheets
3. claims	:	9	sheets
4. abstract	:	1	sheets
5. drawings	:	58	sheets
Total :		165	sheets

This international application is accompanied by the item(s) marked below:

1. <input type="checkbox"/> separate signed power of attorney	5. <input type="checkbox"/> fee calculation sheet
2. <input type="checkbox"/> copy of general power of attorney	6. <input type="checkbox"/> separate indications concerning deposited microorganisms
3. <input type="checkbox"/> statement explaining lack of signature	7. <input type="checkbox"/> nucleotide and/or amino acid sequence listing (diskette)
4. <input type="checkbox"/> priority document(s) identified in Box No. VI as item(s):	8. <input type="checkbox"/> other (specify):

Figure No. ~~2~~ of the drawings (if any) should accompany the abstract when it is published.

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).



ANN KURTIS
GRIFFITH HACK
Agent for the Applicants

For receiving Office use only

1. Date of actual receipt of the purported international application:	2. Drawings: <input type="checkbox"/> received: <input type="checkbox"/> not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 11(2):	
5. International Searching Authority specified by the applicant: ISA / AU	6. <input type="checkbox"/> Transmittal of search copy delayed until search fee is paid

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

The demand must be filed directly with the competent International Preliminary Examining Authority or, if two or more Authorities are competent, with the one chosen by the applicant. The full name or two-letter code of that Authority may be indicated by the applicant on the line below: IPEA/ AU

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty and hereby elects all eligible States (except where otherwise indicated).

For International Preliminary Examining Authority use only

Identification of IPEA		Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		
International application No. PCT /AU 98 /00315	International filing date (day/month/year) 1 May 1998	Applicant's or agent's file reference P24078FG/TPG (Earliest) Priority date (day/month/year) 1 May 1997
Title of invention Nucleic Acid Molecules Specific for Bacterial Antigens and Uses Thereof		
Box No. II APPLICANT(S)		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) THE UNIVERSITY OF SYDNEY Parramatta Road Sydney, New South Wales 2006 Australia		Telephone No.: Facsimile No.: Teleprinter No.:
State (that is, country) of nationality: AUSTRALIA		State (that is, country) of residence: AUSTRALIA
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) REEVES, Peter Richard 20 Mansfield Street Glebe, New South Wales Australia 2037		
State (that is, country) of nationality: GREAT BRITAIN		State (that is, country) of residence: AUSTRALIA
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.) WANG, Lei 8A Holt Street North Ryde, New South Wales Australia 2113		
State (that is, country) of nationality: AUSTRALIA		State (that is, country) of residence: AUSTRALIA
<input type="checkbox"/> Further applicants are indicated on a continuation sheet.		

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The following person is agent common representative

and has been appointed earlier and represents the applicant(s) also for international preliminary examination.

is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.

is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

GRIFFITH HACK
GPO Box 4164
SYDNEY NSW 2001
AUSTRALIA

Telephone No.:

61-02-9957-5944

Facsimile No.:

61-02-9957-6288

Teleprinter No.:

Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION

Statement concerning amendments:*

1. The applicant wishes the international preliminary examination to start on the basis of:

the international application as originally filed
 the description as originally filed
 as amended under Article 34
 the claims as originally filed
 as amended under Article 19 (together with any accompanying statement)
 as amended under Article 34
 the drawings as originally filed
 as amended under Article 34

2. The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.

3. The applicant wishes the start of the international preliminary examination to be postponed until the expiration of 20 months from the priority date unless the International Preliminary Examining Authority receives a copy of any amendments made under Article 19 or a notice from the applicant that he does not wish to make such amendments (Rule 69.1(d)). *(This check-box may be marked only where the time limit under Article 19 has not yet expired.)*

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English

which is the language in which the international application was filed.
 which is the language of a translation furnished for the purposes of international search.
 which is the language of publication of the international application.
 which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

Box No. V ELECTION OF STATES

The applicant hereby elects all eligible States *(that is, all States which have been designated and which are bound by Chapter II of the PCT)*

- excluding the following States which the applicant wishes not to elect:

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

		For International Preliminary Examining Authority use only
		received not received
1. translation of international application	: sheets	<input type="checkbox"/> <input type="checkbox"/>
2. amendments under Article 34	: sheets	<input type="checkbox"/> <input type="checkbox"/>
3. copy (or, where required, translation) of amendments under Article 19	: sheets	<input type="checkbox"/> <input type="checkbox"/>
4. copy (or, where required, translation) of statement under Article 19	: sheets	<input type="checkbox"/> <input type="checkbox"/>
5. letter	: sheets	<input type="checkbox"/> <input type="checkbox"/>
6. other (specify)	: sheets	<input type="checkbox"/> <input type="checkbox"/>

The demand is also accompanied by the item(s) marked below:

1. <input checked="" type="checkbox"/> fee calculation sheet	4. <input type="checkbox"/> statement explaining lack of signature
2. <input type="checkbox"/> separate signed power of attorney	5. <input type="checkbox"/> nucleotide and or amino acid sequence listing in computer readable form
3. <input type="checkbox"/> copy of general power of attorney; reference number, if any:	6. <input type="checkbox"/> other (specify):

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).



ANN KURTS
GRIFFITH HACK
Agent for the Applicants

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.

The applicant has been informed accordingly.

4. The date of receipt of the demand is WITHIN the period of 19 months from the priority date as extended by virtue of Rule 80.5.

5. Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference P24078FG/TPG	FOR FURTHER ACTION	see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/AU 98/00315	International filing date (day/month/year) 1 May 1998	(Earliest) Priority Date (day/month/year) 1 May 1997
Applicant (1) THE UNIVERSITY OF SYDNEY (2) REEVES, Peter Richard and WANG, Lei		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of **four** sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Certain claims were found unsearchable (See Box I)
2. Unity of invention is lacking (See Box II)
3. The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing
 - filed with the international application
 - furnished by the applicant separately from the international application,
 - but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed
 - transcribed by this Authority
 - the text is approved as submitted by the applicant.
 - the text has been established by this Authority to read as follows:
5. With regard to the abstract,
 - the text is approved as submitted by the applicant
 - the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
6. The figure of the drawings to be published with the abstract is:
 - as suggested by the applicant.
 - because the applicant failed to suggest a figure
 - because this figure better characterises the invention
 - None of the figures

A. CLASSIFICATION OF SUBJECT MATTER		
Int Cl ⁶ : C12N 9/10, 9/90, 9/92, 15/54, 15/61		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols)		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT - C12N 15/54 + 15/61, o-antigen CA/Medline/Genbank/EMBL - sequence search on sequences as claimed and o-antigen		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU-A-53913/96 (CHILDREN'S HOSPITAL AND MEDICAL CENTRE) 17 October 1996. (See whole document, specifically claims and sequence Id no. 1)	1-42
X	BASTIN, D A and REEVES, P R (1995) "Sequence and analysis of the O antigen gene (rfb) cluster of Escherichia coli oil" <u>Gene</u> 164:17-23 see whole document, specifically abstract and page 20	1-42
P,X	WO 97/41234 (UNIVERSITY OF GUELPH) 6 November 1997	1-5, 7, 8, 12-42
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C		<input type="checkbox"/> See patent family annex
<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>		
Date of the actual completion of the international search 29 May 1998	Date of mailing of the international search report - 5 JUN 1998	
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929	Authorized officer P WYRDEMAN Telephone No.: (02) 6283 2554	

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/AU 98/00315

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU-B 74599/87 (603588) (TIMMIS, K N) 7 January 1988 See whole document	1 and 2
X	GÖHMANN, S et al (1994) "Lipopolysaccharide O-antigen biosynthesis in <i>Shigella dysenteriae</i> serotype 1: analysis of the plasmid-carried rfp determinant" <u>Microbial Pathogenesis</u> , 16:53-64	1
X	WO 89/12693 (LUMINIS PTY LTD) 28 December 1989 See especially the claims and examples	1-42

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/AU 98/00315

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
AU	53913/96	WO	96/32405	EP	832090	US	5654417
WO	97/41234	AU	23774/97				
AU	74599/87	EP	250614	JP	63024887		
WO	89/12693	AU	37763/89	DK	379/90	EP	377711

END OF ANNEX

PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Griffith Hack
GPO Box 4164
SYDNEY NSW 2001

PCT

WRITTEN OPINION

(PCT Rule 66)

Date of mailing
(day/month/year)

18 DEC 1998

REPLY DUE

within **two months**
from the above date of mailing

Applicant's or agent's file reference
P24078FG/TPG

International filing date (day/month/year)

1 May 1998

Priority Date (day/month/year)

1 May 1997

International Patent Classification (IPC) or both national classification and IPC

Int. Cl.⁶ C12N 9/10, 9/90, 9/92, 15/54, 15/61

Applicant

THE UNIVERSITY OF SYDNEY et al

1. This written opinion is the **first** (first, etc) drawn by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:

I	<input checked="" type="checkbox"/> Basis of the opinion
II	<input type="checkbox"/> Priority
III	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
IV	<input type="checkbox"/> Lack of unity of invention
V	<input checked="" type="checkbox"/> Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
VI	<input type="checkbox"/> Certain documents cited
VII	<input type="checkbox"/> Certain defects in the international application
VIII	<input type="checkbox"/> Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also For an additional opportunity to submit amendments, see Rule 66.4. For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4bis. For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: **1 September 1999**

Name and mailing address of the IPEA/AU
AUSTRALIAN PATENT OFFICE
PO BOX 200
WODEN ACT 2606
AUSTRALIA
Facsimile No. (02) 6285 3929

Authorized Officer

P WYRDEMAN

Telephone No. (02) 6283 2554

WRITTEN & ILLUSTRATED

International application No.

PCT/AU 98/00315

I. Basis of the opinion

1. With regard to the elements of the international application.*

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

the language of publication of the international application (under Rule 48.3(b)).

the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

contained in the international application in printed form.

filed together with the international application in computer readable form.

furnished subsequently to this Authority in written form.

furnished subsequently to this Authority in computer readable form.

The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

The amendments have resulted in the cancellation of:

4. The amendments have resulted in the cancellation of:

- the description, pages
- the claims, Nos.
- the drawings, sheets/fig.

5

This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed".

WRITTEN OPINION

International application No.
PCT/AU 98/00315

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 10-31, 33-42 Claims 1-9, 32	YES NO
Inventive step (IS)	Claims none Claims 1-42	YES NO
Industrial applicability (IA)	Claims 1-42 Claims none	YES NO

2. Citations and explanations

The documents referred to are listed D1-D6 in the same order in which they appear in the ISR.

D1 discloses sequences from *E. coli* that correspond to those defined in claims 6-9.

D2 discloses sequences of the rfb cluster of *E. coli* that fall within the scope of the subject matter of claims 1-6.

D3 discloses nucleic acid molecules derived from proteins involved in the synthesis and assembly of O-antigen in *P. aeruginosa* that fall within the scope of the subject matter of claims 1-5, 7, 8, 12-42. This document was published after the priority date of the current application but would be considered a novelty citation under Australian law or where the priority of the present application came into question.

D4 discloses nucleic acid molecules for glycosyltransferases from *S. dysenteriae* that fall within the scope of the subject matter of claims 1 and 2.

D5 discloses nucleic acid molecules associated with o-antigen and rfp.

D6 discloses nucleic acid molecules that fall within the scope of claims 1 and 2.

NOVELTY

Claims 6 to 9 lack novelty over D1, claims 1-6 lack novelty over D2, claims 1 and 2 lack novelty in light of D4 and D6 while D5 deprives claim 1 of novelty. Claim 32 lacks novelty over any of claims D1, D2, D4-D6.

INVENTIVE STEP

Claims 1-42 lack an inventive step over any of D1, D2, D4, D5 or D6. The current application is directed to nucleic acid molecules useful for the detection of bacterial polysaccharide antigens. The prior art base indicates that the genetic region was well known at the priority date as well as the fact that this cluster codes for enzymes involved in o-antigen synthesis. The person skilled in the art would find it obvious that the nucleic acids disclosed in the citations could be used to identify the presence of bacterial antigens. Thus claims 1-42 lack inventive step.

INDUSTRIAL APPLICABILITY

The claimed subject matter is deemed industrially applicable.

PATENT COOPERATION TREATY

From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

Griffith Hack
GPO Box 4164
SYDNEY NSW 2001

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY EXAMINATION
REPORT

(PCT Rule 71.1)

Date of mailing
day/month/year

23 MAR 1999

IMPORTANT NOTIFICATION

Applicant's or agent's file reference

TPG:ELM:P20478FG/FP9635

International application No.
PCT/AU 98/00315

International filing date
1 May 1998

Priority date
1 May 1997

Applicant

THE UNIVERSITY OF SYDNEY et al

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translations to those Offices.

REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide

Name and mailing address of the IPEA/AU
AUSTRALIAN PATENT OFFICE
PO BOX 200
WODEN ACT 2606
AUSTRALIA
Facsimile No.: (02) 6285 3929

Authorized officer

PHILIPPA WYRDEMAN

Telephone No. (02) 6283 2554

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference TPG:ELM:P20478FG/FP9635	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. PCT/AU 98/00315	International filing date (day/month/year) 1 May 1998	Priority Date (day/month/year) 1 May 1997
International Patent Classification (IPC) or national classification and IPC Int. Cl. C12N 9/10, 9/90, 9/92, 15/54, 15/61		
Applicant THE UNIVERSITY OF SYDNEY et al		

<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 3 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheet(s).</p>																	
<p>3. This report contains indications relating to the following items:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: right; padding-right: 5px;">I</td> <td style="width: 90%; padding-left: 5px;"><input checked="" type="checkbox"/> Basis of the report</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">II</td> <td style="padding-left: 5px;"><input type="checkbox"/> Priority</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">III</td> <td style="padding-left: 5px;"><input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">IV</td> <td style="padding-left: 5px;"><input type="checkbox"/> Lack of unity of invention</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">V</td> <td style="padding-left: 5px;"><input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">VI</td> <td style="padding-left: 5px;"><input type="checkbox"/> Certain documents cited</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">VII</td> <td style="padding-left: 5px;"><input type="checkbox"/> Certain defects in the international application</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">VIII</td> <td style="padding-left: 5px;"><input type="checkbox"/> Certain observations on the international application</td> </tr> </table>		I	<input checked="" type="checkbox"/> Basis of the report	II	<input type="checkbox"/> Priority	III	<input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	IV	<input type="checkbox"/> Lack of unity of invention	V	<input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	VI	<input type="checkbox"/> Certain documents cited	VII	<input type="checkbox"/> Certain defects in the international application	VIII	<input type="checkbox"/> Certain observations on the international application
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Date of submission of the demand 20 November 1998	Date of completion of the report 16 March 1999
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. (02) 6285 3929	Authorized Officer PHILIPPA WYRDEMAN Telephone No. (02) 6283 2554

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU 98/00315

I. Basis of the report

1. With regard to the elements of the international application:*

 the international application as originally filed. the description, pages , as originally filed,
 pages , filed with the demand,
 pages , filed with the letter of . the claims, pages , as originally filed,
 pages , as amended (together with any statement) under Article 19,
 pages , filed with the demand,
 pages , filed with the letter of . the drawings, pages , as originally filed,
 pages , filed with the demand,
 pages , filed with the letter of . the sequence listing part of the description:
 pages , as originally filed
 pages , filed with the demand
 pages , filed with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language which is:

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3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, was on the basis of the sequence listing:

 contained in the international application in written form. filed together with the international application in computer readable form. furnished subsequently to this Authority in written form. furnished subsequently to this Authority in computer readable form. The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished. The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished4. The amendments have resulted in the cancellation of: the description, pages the claims, Nos. the drawings, sheets/fig5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU 98/00315

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims 10-31, 33-42	YES
	Claims 1-9, 32	NO
Inventive step (IS)	Claims none	YES
	Claims 1-42	NO
Industrial applicability (IA)	Claims 1-42	YES
	Claims none	NO

2. Citations and explanations (Rule 70.7)

The documents referred to are listed D1-D6 in the same order in which they appear in the ISR.

D1 discloses sequences from *E. coli* that correspond to those defined in claims 6-9.

D2 discloses sequences of the rfb cluster of *E. coli* that fall within the scope of the subject matter of claims 1-6.

D3 discloses nucleic acid molecules derived from proteins involved in the synthesis and assembly of O-antigen in *P. aeruginosa* that fall within the scope of the subject matter of claims 1-5, 7, 8, 12-42. This document was published after the priority date of the current application but would be considered a novelty citation under Australian law or where the priority of the present application came into question.

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D5 discloses nucleic acid molecules associated with O-antigen and rfp.

D6 discloses nucleic acid molecules that fall within the scope of claims 1 and 2.

NOVELTY (N)

Claims 6 to 9 lack novelty over D1, claims 1-6 lack novelty over D2, claims 1 and 2 lack novelty in light of D4 and D6 while D5 deprives claim 1 of novelty. Claim 32 lacks novelty over any of claims D1, D2, D4-D6.

INVENTIVE STEP (IS)

Claims 1-42 lack an inventive step over any of D1, D2, D4, D5 or D6. The current application is directed to nucleic acid molecules useful for the detection of bacterial polysaccharide antigens. The prior art base indicates that the genetic region was well known at the priority date as well as the fact that this cluster codes for enzymes involved in O-antigen synthesis. The person skilled in the art would find it obvious that the nucleic acids disclosed in the citations could be used to identify the presence of bacterial antigens. Thus claims 1-42 lack inventive step.

INDUSTRIAL APPLICABILITY (IA)

The claimed subject matter is deemed industrially applicable.

INTERNATIONAL COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 30 MAR 1999

WIPO PCT

Applicant's or agent's file reference TPG:ELM:P20478FG/FP9635	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International application No. PCT/AU 98/00315	International filing date (day/month/year) 1 May 1998	Priority Date (day/month/year) 1 May 1997
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Applicant THE UNIVERSITY OF SYDNEY et al		

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Date of submission of the demand 20 November 1998	Date of completion of the report 16 March 1999
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. (02) 6285 3929	Authorized Officer PHILIPPA WYRDEMAN Telephone No. (02) 6283 2554

I. Basis of the report

1. With regard to the elements of the international application:*

the international application as originally filed.

the description, pages , as originally filed,
 pages , filed with the demand,
 pages , filed with the letter of .

the claims, pages , as originally filed,
 pages , as amended (together with any statement) under Article 19,
 pages , filed with the demand,
 pages , filed with the letter of .

the drawings, pages , as originally filed,
 pages , filed with the demand,
 pages , filed with the letter of .

the sequence listing part of the description:
 pages , as originally filed
 pages , filed with the demand
 pages , filed with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language which is:

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the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

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4. The amendments have resulted in the cancellation of:

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the claims, Nos.

the drawings, sheets/fig

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims 10-31, 33-42 Claims 1-9, 32	YES NO
Inventive step (IS)	Claims none Claims 1-42	YES NO
Industrial applicability (IA)	Claims 1-42 Claims none	YES NO

2. Citations and explanations (Rule 70.7)

The documents referred to are listed D1-D6 in the same order in which they appear in the ISR.

D1 discloses sequences from *E. coli* that correspond to those defined in claims 6-9.

D2 discloses sequences of the rfb cluster of *E. coli* that fall within the scope of the subject matter of claims 1-6.

D3 discloses nucleic acid molecules derived from proteins involved in the synthesis and assembly of O-antigen in *P. aeruginosa* that fall within the scope of the subject matter of claims 1-5, 7, 8, 12-42. This document was published after the priority date of the current application but would be considered a novelty citation under Australian law or where the priority of the present application came into question.

D4 discloses nucleic acid molecules for glycosyltransferases from *S. dysenteriae* that fall within the scope of the subject matter of claims 1 and 2.

D5 discloses nucleic acid molecules associated with O-antigen and rfp.

D6 discloses nucleic acid molecules that fall within the scope of claims 1 and 2.

NOVELTY (N)

Claims 6 to 9 lack novelty over D1, claims 1-6 lack novelty over D2, claims 1 and 2 lack novelty in light of D4 and D6 while D5 deprives claim 1 of novelty. Claim 32 lacks novelty over any of claims D1, D2, D4-D6.

INVENTIVE STEP (IS)

Claims 1-42 lack an inventive step over any of D1, D2, D4, D5 or D6. The current application is directed to nucleic acid molecules useful for the detection of bacterial polysaccharide antigens. The prior art base indicates that the genetic region was well known at the priority date as well as the fact that this cluster codes for enzymes involved in O-antigen synthesis. The person skilled in the art would find it obvious that the nucleic acids disclosed in the citations could be used to identify the presence of bacterial antigens. Thus claims 1-42 lack inventive step.

INDUSTRIAL APPLICABILITY (IA)

The claimed subject matter is deemed industrially applicable.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION
(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 14 December 1998 (14.12.98)	Applicant's or agent's file reference P24078FG/TPG
International application No. PCT/AU98/00315	Priority date (day/month/year) 01 May 1997 (01.05.97)
International filing date (day/month/year) 01 May 1998 (01.05.98)	
Applicant REEVES, Peter, Richard et al	

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

20 November 1998 (20.11.98)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Ting Zhao

Telephone No.: (41-22) 338.83.38